

WHAT IS CLAIMED IS:

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1. A communications apparatus for switching among different interfaces and comprising a switch unit, the switch unit comprising:

10 a main switch for switching data of a fixed length; and

an interface having a first buffer for an input of the main switch and a second buffer for an output of the main switch.

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20 2. The communications apparatus as claimed in claim 1, wherein the communications apparatus further comprises a processor that is connected to the switch unit and processes data according to a predetermined protocol, the processor having a third buffer and a fourth buffer connected to the first buffer and the second buffer, the processor
25 performing back pressure control on the third buffer when the first buffer assumes a predetermined state.

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3. The communications apparatus as claimed in claim 1, wherein the communications apparatus further comprises a processor that is connected to the switch unit and processes data according to a
35 predetermined protocol, the processor having a third buffer and a fourth buffer connected to the first buffer and the second buffer, the processor

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performing back pressure control on the first buffer
when the fourth buffer assumes a predetermined state.

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4. The communications apparatus as claimed
in claim 1, wherein the processor performs back
pressure control on the first buffer when the second
10 buffer assumes a predetermined state.

15 5. The communications apparatus as claimed
in claim 1, wherein the communications apparatus
further comprises a processor that is connected to
the switch unit and processes data according to a
predetermined protocol, the processor having a third
20 buffer and a fourth buffer connected to the first
buffer and the second buffer, the processor
performing back pressure control on the fourth
buffer when receiving a request for back pressure
control from an apparatus that is connected to the
25 processor.

30 6. The communications apparatus as claimed
in claim 2, wherein the back pressure control
request is formed by a predetermined flow control
cell.

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7. The communications apparatus as claimed
in claim 3, wherein the back pressure control
request is formed by a predetermined flow control
5 cell.

10 8. The communications apparatus as claimed
in claim 4, wherein the back pressure control
request is formed by a predetermined flow control
cell.

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9. The communications apparatus as claimed
in claim 2, wherein the back pressure control is
20 performed by predetermined Quality of Service (QoS)
class units.

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10. The communications apparatus as claimed
in claim 3, wherein the back pressure control is
performed by predetermined Quality of Service (QoS)
class units.

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11. The communications apparatus as claimed
35 in claim 4, wherein the back pressure control is
performed by predetermined Quality of Service (QoS)
class units.

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5 12. The communications apparatus as claimed
in claim 5, wherein the back pressure control is
performed by predetermined Quality of Service (QoS)
class units.

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15 13. The communications apparatus as claimed
in claim 2, wherein back pressure control is
performed in circuit units.

20 14. The communications apparatus as claimed
in claim 3, wherein back pressure control is
performed in circuit units.

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15 15. The communications apparatus as claimed
in claim 4, wherein back pressure control is
performed in circuit units.

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35 16. The communications apparatus as claimed
in claim 5, wherein back pressure control is
performed in circuit units.

17. The communications apparatus as claimed
5 in claim 2, wherein the predetermined state is
determined at predetermined QoS class units.

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18. The communications apparatus as claimed
in claim 3, wherein the predetermined state is
determined at predetermined QoS class units.

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19. The communications apparatus as claimed
in claim 4, wherein the predetermined state is
20 determined at predetermined QoS class units.

25 20. The communications apparatus as claimed
in claim 2, wherein the predetermined state is
determined at circuit units.

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21. The communications apparatus as claimed
in claim 3, wherein the predetermined state is
determined at circuit units.

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22. The communications apparatus as claimed in claim 4, wherein the predetermined state is determined at circuit units.

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23. The communications apparatus as claimed in claim 2, wherein the processor has a local switch that supplies data received from the switch unit to an internal buffer corresponding to the appropriate circuit.

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24. The communications apparatus as claimed in claim 2, wherein:

20 the processor has a local switch equipped with a buffer that temporarily stores data received from the switch unit; and

the local switch itself has another local switch that reads the data from the buffer and supplies the data so read to an internal buffer of the appropriate circuit.

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25. The communications apparatus as claimed in claim 12, wherein a terminal unit is provided between the processor and the circuits, the terminal unit comprising:

35 a buffer provided at each circuit; and
a buffer capacity monitor that monitors a capacity of the buffer and controls the buffer so as

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to temporarily store data received from the switch unit.

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26. The communications apparatus as claimed in claim 1, wherein:

the switch unit is multiplexed; and
10 a working system receiving a back pressure control request from a passive system discards that back pressure control request.

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27. A communications apparatus for switching among different interfaces and comprising a plurality of switch units, each switch unit
20 comprising:
a main switch for switching data of a fixed length; and
an interface having a first buffer for an input of the main switch and a second buffer for an
25 output of the main switch provided on each circuit.

30 28. The communications apparatus as claimed in claim 15, further comprising:

a plurality of processors connected to the switch unit for performing processes according to a predetermined protocol; and
35 a bus for transmitting a predetermined back pressure control signal to the plurality of processors.

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5 29. The communications apparatus as claimed
in claim 16, wherein each one of the plurality of
switch units receives a back pressure control signal
and controls a flow of information form the first
buffer.

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15 30. A communications control method for
switching among different interfaces, comprising the
steps of:

 switching data handled by the different
interfaces after once buffering data of a fixed
length related to the data handled by the different
20 interfaces; and

 sending the switched data to the circuits
after once buffering the switched data.

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 31. The communications control method as
claimed in claim 18, further comprising the step of:

30 bypassing the switching of data and sending
the back pressure control request to another
apparatus when the buffering assumes a predetermined
state prior to switching.